

4855452 INTERNATIONAL RECTIFIER

55C 04870 D

Data Sheet No. E2584B

INTERNATIONAL RECTIFIER



T-25-15

T50AC-A, 50AC-A SERIES

50A power triacs

A

Major Ratings and Characteristics

	T50AC-A	50AC-A	Units
$I_T(\text{RMS})$	@ $T_c = 85^\circ\text{C}$	—	A
	@ $T_c = 75^\circ\text{C}$	50	A
I_{TSM}	50Hz	520	A
	60Hz	550	A
i^2t	50Hz	1350	A^2s
	60Hz	1250	A^2s
di/dt		100	$A/\mu s$
I_{GT}		200	mA
dv/dt (commutating)		15	$V/\mu s$
T_J		-40 to 125	$^\circ\text{C}$
V_{RRM}, V_{DRM}		400 to 1200	V

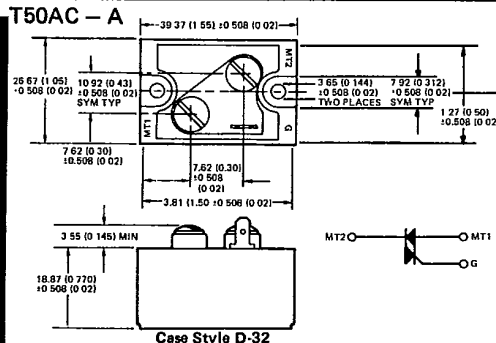
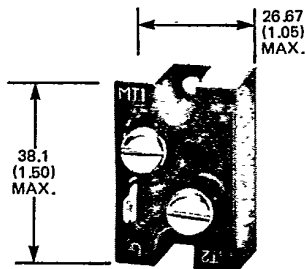
Description

International Rectifier offers two ranges of 50A power triacs, the first is the 50AC-A range in a standard TO-65 package and the second is the T50AC-A range in the isolated base package. Applications include lamp dimmers and other industrial equipment.

Features

- High surge capability
- Choice of package style
 - 1/4" stud
 - Isolated base
- Available up to 1200V V_{RRM}, V_{DRM}
- High dynamic characteristics.

CASE STYLE AND DIMENSIONS



Case Style D-32
All Dimensions in Millimeters and (Inches)
For 50AC-A case style see page A-77.

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ELECTRICAL SPECIFICATIONS

Voltage ratings

Part Number		V _{RRM} , V _{DRM} , Maximum repetitive peak reverse and off-state voltage gate open circuited	V _{RSM} Maximum non-repetitive peak reverse voltage
		V	V
T50AC40A	50AC40A	400	500
T50AC80A	50AC80A	800	700
T50AC80A	50AC80A	800	900
T50AC100A	50AC100A	1000	1100
T50AC120A	50AC120A	1200	1300

On-State

		T50AC-A	50AC-A	Units	Conditions	
I _{T(RMS)}	Maximum RMS on-state current	50		A	Max. T _C = 85°C : 50AC-A. Max. T _C = 75°C : T50AC-A	
I _{TSM}	Maximum peak one cycle non-repetitive surge current	380		A	t = 20ms	Sinusoidal full-wave, Initial T _J = 125°C, rated V _{RRM} reapplied
		400		A	t = 16.7ms	
I _{TSM}	Maximum peak one half-cycle non-repetitive surge current	620		A	t = 10ms	100% rated V _{RRM} reapplied
		550		A	t = 8.3ms	Sinusoidal half-wave Initial T _J = 125°C Either direction
		620		A	t = 10ms	
		650		A	t = 8.3ms	
I ² t	Maximum I ² t capability for fusing	1350		A ² s	t = 10ms	100% rated V _{RRM} reapplied
		1250		A ² s	t = 8.3ms	Initial T _J = 125°C Either direction
		1900		A ² s	t = 10ms	
		1780		A ² s	t = 8.3ms	
I ² √t	Maximum I ² √t capability for fusing ①	24 000		A ² √s	t = 0.1 to 10ms. No voltage reapplied, Initial T _J < 125°C.	
V _{TM}	Maximum peak on-state voltage	2.0		V	T _J = 25°C, I _{TM} = 70A _{pk} , either direction	
I _H	Maximum holding current	90		mA	T _J = 25°C, anode supply = 22V, Initial I _T = 2A in either direction	

Off-State

dv/dt	Maximum critical rate-of-rise of commutation voltage	15	V/μs	T _J = 125°C, Rated V _{RRM} , either direction
dv/dt	Maximum critical rate-of-rise of on-state voltage	200	V/μs	T _J = 125°C, Exponential to 100% rated V _{RRM} , either direction
I _{DM}	Maximum peak off-state current	10	mA	T _J = 125°C, Rated V _{RRM} , either direction
V _{ins}	RMS isolation voltage*	2500	V	Circuit to base, all terminals shorted

Switching

di/dt	Maximum non-repetitive rate-of-rise of turned-on current	100	A/μs	T _J = 125°C, V _{DRM} = rated V _{DRM} , I _{TM} = 100A, gate pulse: 20V, 15μs, t _p > 10μs. Per JEDEC standard RS - 397, 5.2.2.6
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Triggering

P _{GM}	Maximum peak gate power	10	W	2.0ms pulse width
P _{G(AV)}	Maximum average gate power	2	W	
I _{GM}	Maximum peak positive or negative gate current	3	A	
V _{GM}	Maximum peak positive or negative gate voltage	20	V	
I _{GT}	Maximum DC gate current required to trigger	200	mA	MT2+ gate +
		200	mA	MT2- gate -
		200	mA	MT2+ gate -
		200	mA	MT2- gate +
T _J = 25°C, 12V MT1 to MT2 for other temperatures refer to Fig. 8.				
V _{GT}	Maximum DC gate voltage required to trigger	2.5	V	T _J = 25°C, 12V MT1 to MT2
V _{GD}	Maximum required gate voltage not to trigger	0.2	V	

* This refers to T50AC-A series only.

① I²t for time t_x = I²√t_x · √t_x

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T50AC-A, 50AC-A Series

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Thermal and Mechanical Specifications

		T50AC-A	50AC-A	Units	Conditions		
T_J	Maximum operating temperature range	-40 to 125		°C			
T_{stg}	Maximum storage temperature range	-40 to 125		°C			
R_{thJC}	Maximum internal thermal resistance, junction to case	0.70	0.45	K/W	DC operation		
R_{thCS}	Maximum thermal resistance, case to heatsink	0.25	0.25	K/W	Mounting surface smooth, flat and greased		
T	Mounting torque	Device to heatsink		15	20(27.5)	lbf.in	
				0.18	0.23(0.32)	kgf.m	
	$\pm 10\%$		Terminals MT1 and MT2		1.7	2.3(3.1)	Nm
					4.5	—	lbf.in
					0.13	—	kgf.m
				1.3	—	Nm	
Case style		—		TO-208AC (TO-65)	JEDEC		
wt	Approximate weight	54 (1.9)	28 (1.0)	g (oz)			

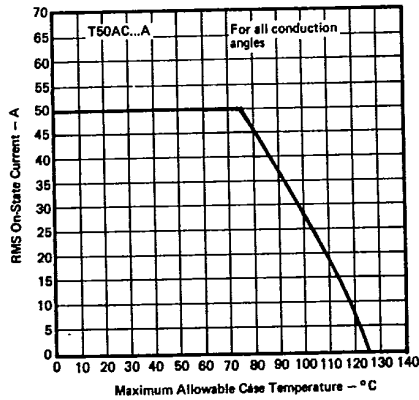
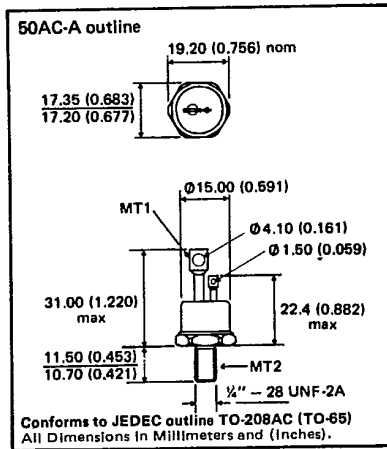


Fig. 1 - RMS On-State Current Vs. Maximum Allowable Case Temperature, T50AC-A Series

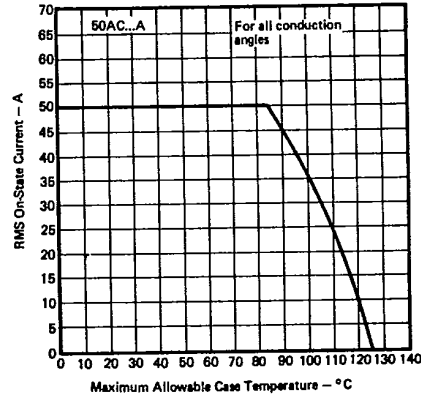


Fig. 2 - RMS On-State Current Vs. Maximum Allowable Case Temperature, 50AC-A Series

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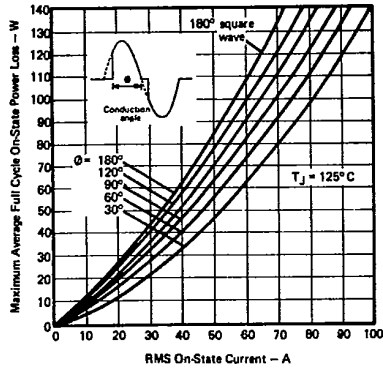


Fig. 3 - Maximum Low Level On-State Power Loss Vs. RMS On-State Current, Both Series

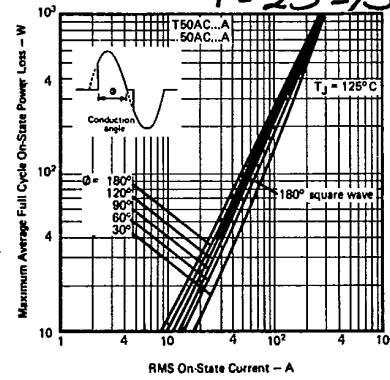


Fig. 4 - Maximum High Level On-State Power Loss Vs. RMS On-State Current, Both Series

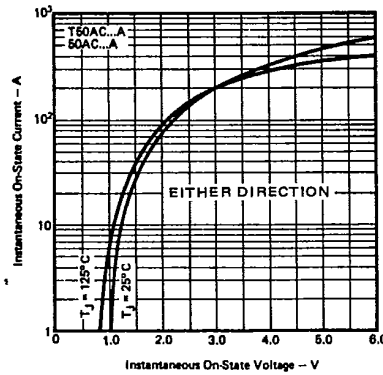


Fig. 5 - Maximum Instantaneous On-State Voltage Vs. Instantaneous On-State Current, Both Series

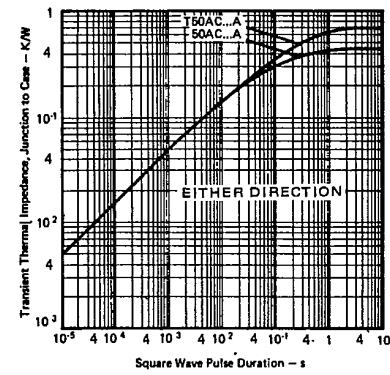


Fig. 6 - Maximum Transient Thermal Impedance Vs. Square Wave Pulse Duration, Both Series

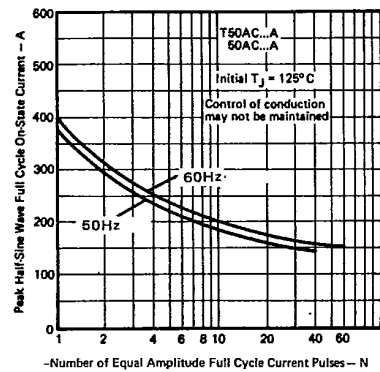


Fig. 7 - Maximum Non-Repetitive Surge Current Vs. Number of Current Pulses, Both Series

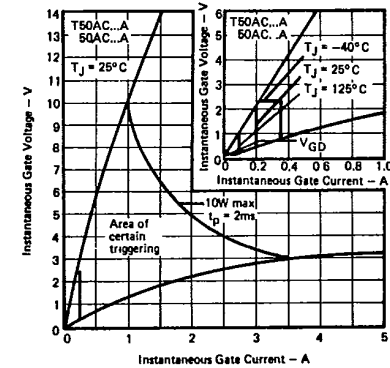


Fig. 8 - Gate Characteristics, Both Series